Course duration

- 4 days

Course Benefits

- Gain a thorough understanding of the philosophy and architecture of .NET
- Acquire a working knowledge of the .NET programming model and .NET Security
- Implement multi-threading effectively in .NET applications
- Learn how to implement database applications using ADO.NET and LINQ
- Learn how to debug .NET applications using .NET diagnostic classes and tools

Available Delivery Methods

Public Class
Public expert-led online training from the convenience of your home, office or anywhere with an internet connection. Guaranteed to run .

Private Class
Private classes are delivered for groups at your offices or a location of your choice.

Course Outline

1. .NET Fundamentals
    1. What is Microsoft .NET?
    2. Common Language Runtime
    3. CLR Serialization
    4. Attribute-Based Programming
    5. Interface-Based Programming
    6. Metadata
    7. Common Type System
    8. Framework Class Library
    9. Language Interoperability
    10. Managed Code
    11. Assemblies and Deployment
    12. Web Services
    13. ASP.NET
    14. Performance
    15. .NET Native

16. .NET Core and Cross-platform Development
17. XML Serialization

2. Class Libraries
    1. Components in .NET
    2. Building Class Libraries at the Command Line
    3. Class Libraries Using Visual Studio
    4. Using References
3. Assemblies, Deployment and Configuration
    1. Assemblies
    2. Private Assembly Deployment
    3. Shared Assembly Deployment
    4. Configuration Overview
    5. Configuration Files
    6. Programmatic Access to Configuration
    7. Using SDK Tools for Signing and Deployment
    8. Application Settings
4. Metadata and Reflection
    1. Metadata
    2. Reflection
    3. Late Binding
5. I/O and Serialization
    1. Directories
    2. Files
    3. Serialization
    4. Attributes
6. .NET Programming Model
    1. Memory Management and Garbage Collection
    2. Asynchronous Delegates
    3. BackgroundWorker
    4. Application Domains
7. .NET Threading
    1. Threading Fundamentals
    2. ThreadPool
    3. Foreground and Background Threads
    4. Synchronization
    5. Task Parallel Library
8. .NET Security
    1. Authentication and Authorization
    2. Code Access Security
    3. Sandboxing
    4. Permissions
    5. Role-Based Security
    6. Principals and Identities
9. Interoperating with COM and Win32
    1. .NET Client Calling a COM Server
    2. 64-bit System Considerations
    3. PInvoke

10. ADO.NET and LINQ
    1. ADO.NET Overview
    2. .NET Data Providers
    3. Connections
    4. Using LocalDB
    5. Commands
    6. DataReaders and Connected Access
    7. Data Sets and Disconnected Access
    8. Language Integrated Query
11. Debugging Fundamentals
    1. Compile-time Errors and Run-time Errors
    2. Configuring Debug, Release, and Special Builds
    3. Visual Studio Debugger
    4. Just-In-Time Debugging
    5. Attaching Debugger to a Running Process
12. Tracing
    1. Tracing
    2. Event Logs
13. More About Tracing
    1. Using the BooleanSwitch and TraceSwitch Classes
    2. Print Debugging Information with the Debug Class
    3. Instrumenting Release Builds with the Trace Class
    4. Using Listeners
    5. Implementing Custom Listeners

Class Materials

Each student will receive a comprehensive set of materials, including course notes and all the class examples.

Class Prerequisites

Experience in the following *is required* for this C# class:

- The student should be an experienced application developer or architect with a working knowledge of C#, including building simple GUIs with Windows Forms.